REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-7 and 10-15 are currently pending, Claims 1 and 14 having been amended. The changes and additions to the claims do not add new matter and are supported by the originally filed specification, for example, on Fig. 8.

In the outstanding Office Action, Claims 1, 2, 3, 6, 7, 13 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Onggosanusi et al. (U.S. Pub. No. 2003/0139139, hereafter "Onggosanusi") in view of Juntti et al. (U.S. Pub. No. 2003/0179814, hereafter "Juntti") and Sugimoto et al. (U.S. Patent No. 6,661,836, hereafter "Sugimoto"); Claims 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Onggosanusi in view of Juntti, Sugimoto, and Walton et al. (U.S. Pub. No. 2004/0082356, hereafter "Walton"); Claims 10-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Onggosanusi in view of Juntti, Sugimoto, and Song et al. (U.S. Pub. No. 2004/0120415, hereafter "Song"); and Claim 14 was rejected under 35 U.S.C. §103(a) as being unpatentable over Onggosanusi in view of Sugimoto.

With respect to the rejection of Claim 1 under 35 U.S.C. §103(a), Applicants respectfully submit that the amendment to Claim 1 overcomes this ground of rejection. Amended Claim 1 recites, *inter alia*,

> serially coupled multipath receiving signal demodulating units for primary demodulation of the signals received by the receiving antennas, for estimating the signals transmitted from the transmitting antennas, and for obtaining a received signal of each path of the receiving antennas in a multipath environment based on the estimated signals;
>
> serially coupled multipath interference canceling units for deducting the obtained signals received through the paths other than a target path from the signals received

> by the receiving antennas to obtain multipath interference cancelled signals; and
>
> a demodulating unit for secondary demodulation of the multipath interference cancelled signals,
>
> wherein the multipath receiving signal demodulating units and the multipath interference canceling units are serially arranged in stages, a receiving signal received at each of the receiving antennas is inputted to all the serially coupled corresponding multipath interference canceling units, each of the stages other than the first stage updates a channel coefficient estimated based on a known pilot signal transmitted from the M transmitting antennas using a multipath interference cancelled signal provided by a multipath interference canceling unit in an upper stage.

Applicants submit that the applied art fails to disclose or suggest at least these features of amended Claim 1.

Applicants' Fig. 8 shows a non-limiting example of the invention defined by amended Claim 1. Fig. 8 shows that a receiving signal received at each of the receiving antennas 21 is inputted to all the serially coupled corresponding multipath interference canceling units 221.

Onggosanusi is directed to a multiple input multiple output (MIMO) scheme for combining transmit diversity and data multiplexing. Onggosanusi describes that a receiver can directly estimate a channel (see para. [0017]). Onggosanusi also describes methods of interference-resistance detection, which include optimal maximum likelihood detection, linear detection, and iterative detection (see para. [0034]-[0038]).

The Office Action acknowledges that both Onggosanusi and Juntti fail to disclose or suggest a receiving signal received at each of the receiving antennas is inputted to a corresponding multipath interference canceling unit. (See Office Action, at page 4).

Applicants submit that both Onggosanusi and Juntti also fail to disclose or suggest "a receiving signal received at each of the receiving antennas is inputted to all the serially

coupled corresponding multipath interference canceling units," as defined by amended Claim 1.

The Office Action relies on Sugimoto to remedy the deficiencies of Onggosanusi and Juntti with regard to Claim 1.

Fig. 1 of Sugimoto describes a receiving device for a CDMA communication system, which has a hybrid interference canceller (HIC) 12 that cancels interference in received data 10 and estimates and outputs a plurality of user symbols 13 (see col. 5, lines 37-39). Fig. 2 shows that the HIC 12 has three connected stages 16, 20, and 24. The first stage 16 performs correlation detection and maximum ratio combination with Rx Data 10 by use of Rake receipt circuits, executes signal correction and decision with the resulting signals in order to estimate the individual users' symbols and a residual signal 18, and feeds the symbols 18 to second stage 20 (see col. 5, lines 44-49). Stages 20 and 24 have the same configuration as stage 16 (see col. 5, lines 50-55). Fig. 3 shows that exemplary stage 16 includes a first ICU group or interference canceling unit 26 and a second ICU group or interference canceling unit 30 (see col. 5, lines 65-67).

However, in Sugimoto, the received signal Rx Data 10 is inputted only to the first interference canceling unit (ICU) 26 of the first stage, but is not inputted to the second ICU 30 of the first stage. Additionally, the received signal Rx Data 10 is not inputted to the first ICU 32 or the second ICU 26 of the second stage, and it is not inputted to the first ICU 38 or the second ICU 42 of the third stage.

Therefore, Sugiyama does not disclose or suggest "a receiving signal received at each of the receiving antennas is inputted ***to all the serially coupled corresponding multipath interference canceling units***," as defined by amended Claim 1.

Therefore, Applicants submit that Sugiyama fails to remedy the deficiencies of Onggosanusi and Juntti with regard to amended Claim 1.

Walton and Song have been considered but also fail to remedy the deficiencies of Onggosanusi, Juntti, and Sugimoto with regard to amended Claim 1.

Therefore, Applicants respectfully submit that amended Claim 1 (and all associated dependent claims) patentably distinguishes over Onggoanusi, Juntti, Sugimoto, Walton, and Song, either alone or in proper combination.

Amended independent Claim 14 recites features similar to those of amended Claim 1 discussed above. Therefore, Applicants respectfully submit that amended Claim 14 patentably distinguishes over Onggosanusi, Juntti, Sugimoto, Walton, and Song, either alone or in proper combination.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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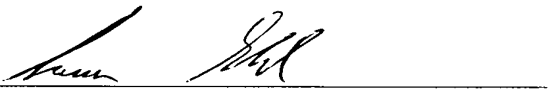

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